

Union Calendar No. 205

110TH CONGRESS
1ST SESSION

H. R. 2698

[Report No. 110-329]

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JUNE 13, 2007

Mr. UDALL of Colorado (for himself and Mr. GORDON of Tennessee) introduced the following bill; which was referred to the Committee on Science and Technology

SEPTEMBER 17, 2007

Additional sponsor: Mr. BARTLETT of Maryland

SEPTEMBER 17, 2007

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in italic]

[For text of introduced bill, see copy of bill as introduced on June 13, 2007]

A BILL

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 *This Act may be cited as the “Federal Aviation Re-*
5 *search and Development Reauthorization Act of 2007”.*

6 **SEC. 2. DEFINITIONS.**

7 *As used in this Act—*

8 *(1) the term “Administrator” means the Admin-*
9 *istrator of the Federal Aviation Administration;*

10 *(2) the term “Director” means the Director of the*
11 *Joint Planning and Development Office;*

12 *(3) the term “FAA” means the Federal Aviation*
13 *Administration;*

14 *(4) the term “NASA” means the National Aero-*
15 *navics and Space Administration;*

16 *(5) the term “National Research Council” means*
17 *the National Research Council of the National Acad-*
18 *emies of Science and Engineering;*

19 *(6) the term “NOAA” means the National Oce-*
20 *anic and Atmospheric Administration;*

21 *(7) the term “NSF” means the National Science*
22 *Foundation;*

23 *(8) the term “Office” means the Next Generation*
24 *Air Transportation System Joint Planning and De-*
25 *velopment Office; and*

1 (9) the term “Secretary” means the Secretary of
2 Transportation.

3 **SEC. 3. AUTHORIZATION OF APPROPRIATIONS.**

4 Section 48102(a) of title 49, United States Code, is
5 amended—

6 (1) in paragraph (11)(L), by striking “and”;

7 (2) in paragraph (12)(L), by striking the period
8 and inserting a semicolon; and

9 (3) by adding at the end the following new para-
10 graphs:

11 “(13) for fiscal year 2008, \$335,191,000, includ-
12 ing—

13 “(A) \$7,350,000 for fire research and safety;

14 “(B) \$4,086,000 for propulsion and fuel
15 systems;

16 “(C) \$2,713,000 for advanced materials and
17 structural safety;

18 “(D) \$3,574,000 for atmospheric hazards
19 and digital system safety;

20 “(E) \$14,931,000 for aging aircraft;

21 “(F) \$2,202,000 for aircraft catastrophic
22 failure prevention research;

23 “(G) \$14,651,000 for flightdeck mainte-
24 nance, system integration, and human factors;

1 “(H) \$9,517,000 for aviation safety risk
2 analysis;

3 “(I) \$15,254,000 for air traffic control, tech-
4 nical operations, and human factors;

5 “(J) \$6,780,000 for aeromedical research;

6 “(K) \$19,888,000 for weather programs;

7 “(L) \$6,310,000 for unmanned aircraft sys-
8 tems research;

9 “(M) \$18,100,000 for the Next Generation
10 Air Transportation System Joint Planning and
11 Development Office;

12 “(N) \$13,755,000 for wake turbulence;

13 “(O) \$20,469,000 for environment and en-
14 ergy;

15 “(P) \$1,184,000 for system planning and
16 resource management;

17 “(Q) \$3,415,000 for the William J. Hughes
18 Technical Center Laboratory Facility;

19 “(R) \$74,200,000 for the Center for Ad-
20 vanced Aviation System Development;

21 “(S) \$2,000,000 for the Airport Cooperative
22 Research Program—capacity;

23 “(T) \$3,000,000 for the Airport Cooperative
24 Research Program—environment;

1 “(U) \$5,000,000 for the Airport Cooperative
2 Research Program—safety;

3 “(V) \$3,600,000 for GPS civil requirements;

4 “(W) \$5,000,000 for runway incursion re-
5 duction;

6 “(X) \$6,500,000 for system capacity, plan-
7 ning, and improvement;

8 “(Y) \$3,000,000 for operations concept vali-
9 dation;

10 “(Z) \$1,000,000 for NAS weather require-
11 ments;

12 “(AA) \$4,000,000 for the Airspace Manage-
13 ment Lab;

14 “(BB) \$5,000,000 for airspace redesign;

15 “(CC) \$4,000,000 for wind profiling and
16 weather research, Juneau;

17 “(DD) \$1,000,000 for the Local Area Aug-
18 mentation System (LAAS);

19 “(EE) \$15,000,000 for Safe Flight 21, Alas-
20 ka Capstone;

21 “(FF) \$20,000,000 for NextGen demonstra-
22 tion;

23 “(GG) \$8,907,000 for airports technology
24 research—capacity;

1 “(HH) \$9,805,000 for airports technology
2 research—safety;

3 “(14) for fiscal year 2009, \$481,554,000, includ-
4 ing—

5 “(A) \$8,457,000 for fire research and safety;

6 “(B) \$4,050,000 for propulsion and fuel
7 systems;

8 “(C) \$2,686,000 for advanced materials and
9 structural safety;

10 “(D) \$3,568,000 for atmospheric hazards
11 and digital system safety;

12 “(E) \$14,683,000 for aging aircraft;

13 “(F) \$2,158,000 for aircraft catastrophic
14 failure prevention research;

15 “(G) \$37,499,000 for flightdeck mainte-
16 nance, system integration, and human factors;

17 “(H) \$8,349,000 for aviation safety risk
18 analysis;

19 “(I) \$15,323,000 for air traffic control, tech-
20 nical operations, and human factors;

21 “(J) \$6,932,000 for aeromedical research;

22 “(K) \$22,336,000 for weather program;

23 “(L) \$6,738,000 for unmanned aircraft sys-
24 tems research;

1 “(M) \$18,100,000 for the Next Generation
2 Air Transportation System Joint Planning and
3 Development Office;

4 “(N) \$11,560,000 for wake turbulence;

5 “(O) \$35,039,000 for environment and en-
6 ergy;

7 “(P) \$1,847,000 for system planning and
8 resource management;

9 “(Q) \$3,548,000 for the William J. Hughes
10 Technical Center Laboratory Facility;

11 “(R) \$85,000,000 for Center for Advanced
12 Aviation System Development;

13 “(S) \$5,000,000 for the Airport Cooperative
14 Research Program—capacity;

15 “(T) \$5,000,000 for the Airport Cooperative
16 Research Program—environment;

17 “(U) \$5,000,000 for the Airport Cooperative
18 Research Program—safety;

19 “(V) \$3,469,000 for GPS civil requirements;

20 “(W) \$5,000,000 for runway incursion re-
21 duction;

22 “(X) \$6,500,000 for system capacity, plan-
23 ning and improvement;

24 “(Y) \$3,000,000 for Operations Concept
25 Validation;

1 “(Z) \$1,000,000 for NAS weather require-
2 ments;

3 “(AA) \$4,000,000 for the Airspace Manage-
4 ment Lab;

5 “(BB) \$3,000,000 for airspace redesign;

6 “(CC) \$20,000,000 for Safe Flight 21, Alas-
7 ka Capstone;

8 “(DD) \$12,000,000 for NextGen demonstra-
9 tion;

10 “(EE) \$102,000,000 for NextGen system de-
11 velopment;

12 “(FF) \$8,907,000 for airports technology re-
13 search—capacity;

14 “(GG) \$9,805,000 for airports technology
15 research—safety;

16 “(15) for fiscal year 2010, \$486,502,000, includ-
17 ing—

18 “(A) \$8,546,000 for fire research and safety;

19 “(B) \$4,075,000 for propulsion and fuel
20 systems;

21 “(C) \$2,700,000 for advanced materials and
22 structural safety;

23 “(D) \$3,608,000 for atmospheric hazards
24 and digital system safety;

25 “(E) \$14,688,000 for aging aircraft;

1 “(F) \$2,153,000 for aircraft catastrophic
2 *failure prevention research;*

3 “(G) \$36,967,000 for *flightdeck maintenance, system integration, and human factors;*

5 “(H) \$8,334,000 for *aviation safety risk analysis;*

7 “(I) \$15,471,000 for *air traffic control, technical operations, and human factors;*

9 “(J) \$7,149,000 for *aeromedical research;*

10 “(K) \$23,286,000 for *weather program;*

11 “(L) \$6,236,000 for *unmanned aircraft systems research;*

13 “(M) \$18,100,000 for *the Next Generation Air Transportation System Joint Planning and Development Office;*

16 “(N) \$11,412,000 for *wake turbulence;*

17 “(O) \$34,678,000 for *environment and energy;*

19 “(P) \$1,827,000 for *system planning and resource management;*

21 “(Q) \$3,644,000 for *William J. Hughes Technical Center Laboratory Facility;*

23 “(R) \$90,000,000 for *the Center for Advanced Aviation System Development;*

1 “(S) \$5,000,000 for the Airport Cooperative
2 Research Program—capacity;

3 “(T) \$5,000,000 for the Airport Cooperative
4 Research Program—environment;

5 “(U) \$5,000,000 for the Airport Cooperative
6 Research Program—safety;

7 “(V) \$3,416,000 for GPS civil requirements;

8 “(W) \$5,000,000 for runway incursion re-
9 duction;

10 “(X) \$6,500,000 for system capacity, plan-
11 ning and improvement;

12 “(Y) \$3,000,000 for operations concept vali-
13 dation;

14 “(Z) \$1,000,000 for NAS weather require-
15 ments;

16 “(AA) \$4,000,000 for the Airspace Manage-
17 ment Lab;

18 “(BB) \$3,000,000 for airspace redesign;

19 “(CC) \$20,000,000 for Safe Flight 21, Alas-
20 ka Capstone;

21 “(DD) \$12,000,000 for NextGen demonstra-
22 tion;

23 “(EE) \$102,000,000 for NextGen system de-
24 velopment;

1 “(FF) \$8,907,000 for airports technology re-
2 search—capacity;

3 “(GG) \$9,805,000 for airports technology
4 research—safety; and

5 “(16) for fiscal year 2011, \$514,832,000, includ-
6 ing—

7 “(A) \$8,815,000 for fire research and safety;

8 “(B) \$4,150,000 for propulsion and fuel
9 systems;

10 “(C) \$2,747,000 for advanced materials and
11 structural safety;

12 “(D) \$3,687,000 for atmospheric hazards
13 and digital system safety;

14 “(E) \$14,903,000 for aging aircraft;

15 “(F) \$2,181,000 for aircraft catastrophic
16 failure prevention research;

17 “(G) \$39,245,000 for flightdeck mainte-
18 nance, system integration and human factors;

19 “(H) \$8,446,000 for aviation safety risk
20 analysis;

21 “(I) \$15,715,000 for air traffic control, tech-
22 nical operations, and human factors;

23 “(J) \$7,390,000 for aeromedical research;

24 “(K) \$23,638,000 for weather program;

1 “(L) \$6,295,000 for unmanned aircraft sys-
2 tems research;

3 “(M) \$18,100,000 for the Next Generation
4 Air Transportation System Joint Planning and
5 Development Office;

6 “(N) \$11,471,000 for wake turbulence;

7 “(O) \$34,811,000 for environment and en-
8 ergy;

9 “(P) \$1,836,000 for system planning and
10 resource management;

11 “(Q) \$3,758,000 for William J. Hughes
12 Technical Center Laboratory Facility;

13 “(R) \$114,000,000 for Center for Advanced
14 Aviation System Development;

15 “(S) \$5,000,000 for the Airport Cooperative
16 Research Program—capacity;

17 “(T) \$5,000,000 for the Airport Cooperative
18 Research Program—environment;

19 “(U) \$5,000,000 for the Airport Cooperative
20 Research Program—safety;

21 “(V) \$3,432,000 for GPS civil requirements;

22 “(W) \$2,000,000 for runway incursion re-
23 duction;

24 “(X) \$6,500,000 for system capacity, plan-
25 ning and improvement;

1 “(Y) \$3,000,000 for operations concept vali-
2 dation;

3 “(Z) \$1,000,000 for NAS weather require-
4 ments;

5 “(AA) \$4,000,000 for the Airspace Manage-
6 ment Lab;

7 “(BB) \$3,000,000 for airspace redesign;

8 “(CC) \$20,000,000 for Safe Flight 21, Alas-
9 ka Capstone;

10 “(DD) \$12,000,000 for NextGen demonstra-
11 tion;

12 “(EE) \$105,000,000 for NextGen system de-
13 velopment;

14 “(FF) \$8,907,000 for airports technology re-
15 search—capacity;

16 “(GG) \$9,805,000 for airports technology
17 research—safety.”.

18 **SEC. 4. NEXT GENERATION AIR TRANSPORTATION SYSTEM**

19 **JOINT PLANNING AND DEVELOPMENT OF-**
20 **FICE.**

21 (a) STATUS OF DIRECTOR AND RESPONSIBILITIES OF
22 OFFICE.—Section 709 of the Vision 100—Century of Avia-
23 tion Reauthorization Act (49 U.S.C. 40101 note) is amend-
24 ed—

25 (1) in subsection (a)—

1 (A) in paragraph (1), by adding at the end
2 the following: “The head of the Office shall be the
3 Director. The Director shall report to the Admin-
4 istrator of the Federal Aviation Administration
5 and shall serve as Associate Administrator for
6 the Next Generation Air Transportation System,
7 and shall be a voting member and co-chair of the
8 Joint Resources Council.”;

9 (B) by amending paragraph (2)(C) to read
10 as follows:

11 “(C) creating a transition plan for the im-
12 plementation of that system that includes date-
13 specific milestones for the implementation of new
14 capabilities into the national airspace system;”;

15 (C) in paragraph (2)(G), by striking “;
16 and” and inserting a semicolon;

17 (D) in paragraph (2)(H), by striking the
18 period at the end and inserting “; and”;

19 (E) by adding at the end of paragraph (2)
20 the following:

21 “(I) establishing specific quantitative goals
22 for the safety, capacity, efficiency, performance,
23 and environmental impacts of each phase of Next
24 Generation Air Transportation System imple-
25 mentation activities and measuring actual oper-

1 *ational experience against those goals, taking*
2 *into account noise pollution reduction concerns*
3 *of affected communities to the greatest extent*
4 *practicable in establishing the environmental*
5 *goals;*

6 *“(J) working to ensure global interoper-*
7 *ability of the Next Generation Air Transpor-*
8 *tation System;*

9 *“(K) integrating aviation weather informa-*
10 *tion and space weather information into the*
11 *Next Generation Air Transportation System as*
12 *soon as possible;*

13 *“(L) overseeing, with the Administrator, the*
14 *selection of products or outcomes of research and*
15 *development activities that would be moved to*
16 *the next stage of a demonstration project through*
17 *the Joint Resources Council;*

18 *“(M) maintaining a baseline modeling and*
19 *simulation environment for testing and evalu-*
20 *ating alternative concepts to satisfy Next Gen-*
21 *eration Air Transportation enterprise architec-*
22 *ture requirements; and*

23 *“(N) pursuing the integration of unmanned*
24 *aircraft systems into the national airspace sys-*
25 *tem through research and demonstration pro-*

1 *grams under the auspices of a public and private*
2 *partnership.”; and*

3 *(2) in subsection (e), by striking “2010” and in-*
4 *serting “2011”.*

5 *(b) ACCOUNTABILITY.—Section 709(a) is further*
6 *amended—*

7 *(1) in paragraph (3), by inserting “(A)” after*
8 *the paragraph designation; and*

9 *(2) by adding at the end of paragraph (3) the*
10 *following:*

11 *“(B) The Administrator, the Secretary of Defense, the*
12 *Administrator of NASA, the Secretary of Commerce, the*
13 *Secretary of Homeland Security, and the head of any other*
14 *Department or Federal agency from which the Secretary*
15 *of Transportation requests assistance under paragraph (A)*
16 *shall designate a senior official in the department or agency*
17 *to be responsible for—*

18 *“(i) implementing the department’s or agency’s*
19 *Next Generation Air Transportation System activities*
20 *with the Office, including the execution of all aspects*
21 *of the department’s or agency’s work on developing*
22 *and implementing the integrated plan described in*
23 *section 709(2)(A); and*

24 *“(ii) ensuring that the department or agency*
25 *meets its obligations as set forth in the memorandum*

1 of understanding executed by or on behalf of the de-
 2 partment or agency under subparagraph (D).

3 “(C) The head of any such department or agency
 4 shall—

5 “(i) establish an office within the department or
 6 agency to carry out its responsibilities under the
 7 memorandum of understanding under the supervision
 8 of the designated official; and

9 “(ii) ensure that the designated official has suffi-
 10 cient budgetary authority and staff resources to carry
 11 out the department’s or agency’s Next Generation Air
 12 Transportation System responsibilities as set forth in
 13 the integrated plan under section 709(b).

14 “(D) Not later than 6 months after the date of enact-
 15 ment of the Federal Aviation Research and Development
 16 Reauthorization Act of 2007, the head of each department
 17 or agency that has responsibility for carrying out any ac-
 18 tivity under the integrated plan under section 709(b) shall
 19 execute a memorandum of understanding with the Office
 20 obligating that department or agency to carry out those ac-
 21 tivities.”.

22 (c) INTEGRATED PLAN.—Section 709(b) of the Vision
 23 100—Century of Aviation Reauthorization Act (49 U.S.C.
 24 40101 note) is amended—

1 (1) *by striking the first sentence and inserting*
2 *“The integrated plan shall be designed to ensure that*
3 *the Next Generation Air Transportation System meets*
4 *anticipated future air transportation safety, security,*
5 *mobility, efficiency, and capacity needs and accom-*
6 *plishes the goals under subsection (c).”;*

7 (2) *in paragraph (3)(C), by striking “; and” and*
8 *inserting a semicolon;*

9 (3) *in paragraph (4) by striking the period and*
10 *inserting a semicolon; and*

11 (4) *by adding at the end the following:*

12 *“(5) Date-specific timetables for the partial and*
13 *complete implementation of planned Next Generation*
14 *Air Transportation System capabilities, including*
15 *but not limited to Automated Dependent Surveil-*
16 *lance-Broadcast, Unmanned Aircraft Systems oper-*
17 *ations, Next Generation Enabled Weather system,*
18 *Next Generation Data Communications, NAS Voice*
19 *Switch, System Wide Information Management sys-*
20 *tem, and space weather information, and including*
21 *any necessary certification activities, and including*
22 *an evaluation of the costs and benefits of accelerating*
23 *any of the implementation and certification time-*
24 *tables;*

1 “(6) *Identification of planned demonstration*
 2 *projects and date-specific timetables for the conduct of*
 3 *the demonstration projects and subsequent certifi-*
 4 *cation activities and an evaluation of the costs and*
 5 *benefits of accelerating any of the demonstration*
 6 *projects and certification activities;*

7 “(7) *Date-specific timetables for meeting the en-*
 8 *vironmental requirements identified in subsection (I);*
 9 *and*

10 “(8) *Identification, on an annual basis, of each*
 11 *entity that will be responsible for each component of*
 12 *any research, development, or implementation activ-*
 13 *ity.”.*

14 (d) *ANNUAL REPORT.*—Section 709(d) of the Vision
 15 100—Century of Aviation Reauthorization Act (49 U.S.C.
 16 40101 note) is amended to read as follows:

17 “(d) *ANNUAL REPORTS.*—The Director of the Office
 18 shall transmit a report annually to the Committee on
 19 Science and Technology and the Committee on Transpor-
 20 tation and Infrastructure of the House of Representatives
 21 and the Committee on Commerce, Science, and Transpor-
 22 tation of the Senate at the time of the President’s budget
 23 request describing the progress in carrying out the plan re-
 24 quired under subsection (b) and any changes to that plan.
 25 The annual report shall include—

1 “(1) the updated integrated plan developed under
2 subsection (b);

3 “(2) a detailed description of the progress made
4 in carrying out the integrated plan and any changes
5 made to that plan since the previous annual report,
6 and identifying any changes resulting from funding
7 shortfalls or limitations set by the Office of Manage-
8 ment and Budget;

9 “(3) any deviation from previously established
10 development and implementation milestones, the rea-
11 sons for the deviation, and the impact of the devi-
12 ation;

13 “(4) the relevant programs and activities for the
14 previous fiscal year and the proposed programs and
15 activities under the President’s budget request, of each
16 participating Federal agency and department; and

17 “(5) the levels of funding for each participating
18 Federal agency and department devoted to the pro-
19 grams and activities in paragraph (4) for the pre-
20 vious fiscal year and under the President’s budget re-
21 quest.”.

22 (e) SENIOR POLICY COMMITTEE.—Section 710(a) of
23 the Vision 100—Century of Aviation Reauthorization Act
24 (49 U.S.C. 40101 note) is amended in the last sentence by

1 inserting “, and shall meet at least four times each year”
2 before the period.

3 (f) *BUDGET PREPARATION.*—

4 (1) *Each Federal agency and department par-*
5 *ticipating in the office shall, as part of its annual re-*
6 *quest for appropriations to the Office of Management*
7 *and Budget, submit a report to the Office of Manage-*
8 *ment and Budget which—*

9 (A) *identifies each element of its work pro-*
10 *gram which contributes directly to Next Genera-*
11 *tion Air Transportation System initiative; and*

12 (B) *states the portion of its request for ap-*
13 *propriations that is allocated to each such ele-*
14 *ment.*

15 (2) *The Office of Management and Budget shall*
16 *review each such report in light of the goals, prior-*
17 *ities, and agency and departmental responsibilities*
18 *set forth in the annual report submitted under the*
19 *amendment made by subsection (d), and shall in-*
20 *clude, in the President’s annual budget estimate, a*
21 *statement of the portion of each appropriate agency’s*
22 *or department’s annual budget estimate relating to its*
23 *activities undertaken pursuant to the Next Generation*
24 *Air Transportation System initiative.*

1 (g) *CONTINGENCY PLANNING.*—*The Director shall, as*
 2 *part of the design of the Next Generation Air Transpor-*
 3 *tation System, develop contingency plans for dealing with*
 4 *the degradation of the Next Generation Air Transportation*
 5 *System in the event of a natural disaster, major equipment*
 6 *failure, or act of terrorism.*

7 (h) *ENVIRONMENTAL RESEARCH.*—*The Director shall*
 8 *establish environmental objectives for noise, emissions, and*
 9 *energy consumption to be satisfied in the Next Generation*
 10 *Air Transportation System through a combination of tech-*
 11 *nologies and operational procedures. The Director shall as-*
 12 *sign primary responsibility for the research, development,*
 13 *and demonstration of the applicable technologies in a rel-*
 14 *evant environment to NASA and primary responsibility for*
 15 *demonstration of optimized operational procedures to the*
 16 *FAA.*

17 (i) *GOVERNMENT ACCOUNTABILITY OFFICE ASSESS-*
 18 *MENT AND REPORT.*—

19 (1) *SCOPE.*—*The Comptroller General shall as-*
 20 *sess compliance with the requirements of section 709*
 21 *of the Vision 100—Century of Aviation Reauthoriza-*
 22 *tion Act (49 U.S.C. 40101 note) to determine—*

23 (A) *the effectiveness of the Next Generation*
 24 *Air Transportation System Joint Planning and*
 25 *Development Office in meeting the deadlines and*

1 *milestones of the integrated plan under that sec-*
 2 *tion; and*

3 *(B) the adequacy and effectiveness of the*
 4 *memoranda of understanding executed by Fed-*
 5 *eral departments and agencies under that sec-*
 6 *tion.*

7 *(2) REPORT.—Not later than 270 days after the*
 8 *date of enactment of this Act, and annually thereafter*
 9 *until the Next Generation Air Transportation System*
 10 *is fully operational, the Comptroller General shall*
 11 *transmit a report to the Committee on Science and*
 12 *Technology and the Committee on Transportation*
 13 *and Infrastructure of the House of Representatives*
 14 *and the Committee on Commerce, Science, and Trans-*
 15 *portation of the Senate containing the Comptroller*
 16 *General’s findings, conclusions and recommendations*
 17 *related to the assessment in paragraph (1).*

18 *(j) UNMANNED AIRCRAFT SYSTEMS.—*

19 *(1) RESEARCH INITIATIVE.—*

20 *(A) IMPROVED MANNED AND UNMANNED*
 21 *AIRCRAFT.—Section 44504 of title 49, United*
 22 *States Code, is amended—*

23 *(i) in subsection (a), by inserting “un-*
 24 *manned and manned” after “improve”;*

1 (ii) in subsection (b)(6), by striking
2 “and” after the semicolon;

3 (iii) in subsection (b)(7) by striking
4 the period and inserting “; and”; and

5 (iv) by adding at the end of subsection
6 (b) the following:

7 “(8) in conjunction with other Federal agencies
8 as appropriate, to develop technologies and methods to
9 assess the risk of and prevent defects, failures, and
10 malfunctions of products, parts, and processes, for use
11 in all classes of unmanned aircraft systems that could
12 result in a catastrophic failure of the unmanned air-
13 craft that would endanger other aircraft in the na-
14 tional airspace system.”.

15 (B) SYSTEMS, PROCEDURES, FACILITIES,
16 AND DEVICES.—Section 44505(b) of such title is
17 amended—

18 (i) in paragraph (4), by striking
19 “and” after the semicolon;

20 (ii) in paragraph (5)(C), by striking
21 the period and inserting a semicolon; and

22 (iii) by adding at the end of subsection
23 (b) the following:

1 “(6) to develop a better understanding of the re-
2 lationship between human factors and unmanned air-
3 craft systems safety; and

4 “(7) to develop dynamic simulation models for
5 integrating all classes of unmanned aircraft systems
6 into the national airspace system without any deg-
7 radation of existing levels of safety for all national
8 airspace system users.”.

9 (2) *ROADMAP*.—Not later than 90 days after the
10 date of enactment of this Act, the Administrator shall
11 develop and transmit an unmanned aircraft systems
12 research, development, demonstration and implemen-
13 tation “roadmap” to the Committee on Science and
14 Technology of the House of Representatives and the
15 Committee on Commerce, Science, and Transpor-
16 tation of the Senate.

17 (3) *INDEPENDENT ASSESSMENT*.—

18 (A) *IN GENERAL*.—Not later than 3 months
19 after the date of enactment of this Act, the Ad-
20 ministrator shall enter into an arrangement
21 with the National Research Council for an as-
22 sessment of the status of unmanned aircraft sys-
23 tems that shall include consideration of—

24 (i) human factors regarding unmanned
25 aircraft systems operation;

- 1 (ii) “detect, sense and avoid tech-
- 2 nologies” with respect to both cooperative
- 3 and non-cooperative aircraft;
- 4 (iii) spectrum issues and bandwidth
- 5 requirements;
- 6 (iv) operation in suboptimal winds
- 7 and adverse weather conditions;
- 8 (v) mechanisms for communicating un-
- 9 manned aircraft system location;
- 10 (vi) airworthiness and system redun-
- 11 dancy;
- 12 (vii) flight termination systems for
- 13 safety and security;
- 14 (viii) technologies for unmanned air-
- 15 craft systems flight control;
- 16 (ix) technologies for unmanned aircraft
- 17 systems propulsion;
- 18 (x) unmanned aircraft systems oper-
- 19 ator qualifications, medical standards, and
- 20 training requirements;
- 21 (xi) unmanned aircraft systems main-
- 22 tenance requirements and training require-
- 23 ments;

1 (xii) any other unmanned aircraft sys-
2 tems-related issue the Administrator believes
3 should be addressed; and

4 (xiii) recommendations for integrating
5 unmanned aircraft systems into the na-
6 tional airspace system in a timely manner
7 without any degradation of existing levels of
8 safety for all national airspace system
9 users.

10 (B) *REPORT.*—Not later than 12 months
11 after initiating the study, the National Academy
12 shall submit its report to the Administrator, the
13 Senate Committee on Commerce, Science, and
14 Transportation, and the House of Representa-
15 tives Committee on Science and Technology con-
16 taining its finding and recommendations.

17 (4) *PILOT PROJECTS FOR TRANSITIONING RE-*
18 *SEARCH AND DEVELOPMENT RESULTS.*—

19 (A) *IN GENERAL.*—The Administrator shall
20 establish pilot projects in sparsely populated,
21 low-density Class G air traffic airspace to con-
22 duct experiments and collect data in order to ac-
23 celerate the safe integration of unmanned air-
24 craft systems into the national airspace system

1 *without any degradation of existing levels of*
 2 *safety for all national airspace system users.*

3 *(B) USE OF PUBLIC-PRIVATE PARTNER-*
 4 *SHIP.—In conducting the pilot projects, the Ad-*
 5 *ministrator shall encourage the formation of a*
 6 *public-private partnership.*

7 *(C) REPORT.—Not later than 90 days after*
 8 *completing the pilot projects, the Administrator*
 9 *shall transmit a report to the Committee on*
 10 *Science and Technology of the House of Rep-*
 11 *resentatives and the Committee on Commerce,*
 12 *Science, and Transportation of the Senate, set-*
 13 *ting forth the Administrator’s findings and con-*
 14 *clusions concerning the projects.*

15 *(D) AUTHORIZATION OF APPROPRIA-*
 16 *TIONS.—There is authorized to be appropriated*
 17 *to the Administrator for fiscal years 2008 and*
 18 *2009 such sums as may be necessary to carry out*
 19 *the pilot projects under this paragraph.*

20 **SEC. 5. INTERAGENCY RESEARCH INITIATIVE ON THE IM-**
 21 **PACT OF AVIATION ON THE CLIMATE.**

22 *(a) IN GENERAL.—The Administrator, in coordination*
 23 *with NASA and the United States Climate Change Science*
 24 *Program, shall establish a research initiative to assess the*

1 *impact of aviation on the climate and, if warranted, to*
 2 *evaluate approaches to mitigate that impact.*

3 (b) *RESEARCH PLAN.*—*Not later than 1 year after the*
 4 *date of enactment of this Act, the participating Federal en-*
 5 *tities shall jointly develop a plan for the research program*
 6 *that contains the objectives, proposed tasks, milestones, and*
 7 *5-year budgetary profile.*

8 (c) *REVIEW.*—*The Administrator shall have the Na-*
 9 *tional Research Council conduct an independent review of*
 10 *the interagency research program plan and provide the re-*
 11 *sults of that review to the Committee on Science and Tech-*
 12 *nology of the House of Representatives and the Committee*
 13 *on Commerce, Science, and Transportation of the Senate*
 14 *not later than 18 months after the date of enactment of this*
 15 *Act.*

16 (d) *AUTHORIZATION OF APPROPRIATIONS.*—*There is*
 17 *authorized to be appropriated \$2,000,000 for fiscal year*
 18 *2008, and \$5,000,000 in each of the fiscal years 2009*
 19 *through 2011, for the interagency research program estab-*
 20 *lished under this section.*

21 **SEC. 6. RESEARCH PROGRAM ON RUNWAYS.**

22 (a) *ESTABLISHMENT OF RESEARCH PROGRAM.*—*The*
 23 *Administrator shall establish a program of research grants*
 24 *to universities and non-profit research foundations for re-*
 25 *search and technology demonstrations related to—*

- 1 (1) *improved runway surfaces; and*
- 2 (2) *engineered material restraining systems for*
- 3 *runways at both general aviation airports and air-*
- 4 *ports with commercial air carrier operations.*

5 (b) *AUTHORIZATION OF APPROPRIATIONS.—There is*
6 *authorized to be appropriated \$5,000,000 for each of the*
7 *fiscal years 2008 through 2011 to carry out this section.*

8 **SEC. 7. RESEARCH ON DESIGN FOR CERTIFICATION.**

9 (a) *JOINT PROGRAM.—Not later than 6 months after*
10 *the date of enactment of this Act, the FAA and NASA shall*
11 *establish a joint research program on methods to improve*
12 *both confidence in and the timeliness of certification of new*
13 *technologies for their introduction into the national air-*
14 *space system.*

15 (b) *RESEARCH PLAN.—Not later than 1 year after the*
16 *date of enactment of this Act, as part of the activity de-*
17 *scribed in subsection (a), the FAA and NASA shall jointly*
18 *develop a plan for the research program that contains the*
19 *objectives, proposed tasks, milestones, and five-year budg-*
20 *etary profile.*

21 (c) *REVIEW.—The Administrator shall have the Na-*
22 *tional Research Council conduct an independent review of*
23 *the joint research program plan and provide the results of*
24 *that review to the Committee on Science and Technology*
25 *of the House of Representatives and the Committee on Com-*

1 *merce, Science, and Transportation of the Senate not later*
 2 *than 18 months after the date of enactment of this Act.*

3 **SEC. 8. CENTERS OF EXCELLENCE.**

4 *(a) AMENDMENT.—Section 44513(f) of title 49, United*
 5 *States Code, is amended to read as follows:*

6 *“(f) GOVERNMENT’S SHARE OF COSTS.—The United*
 7 *States Government’s share of establishing and operating the*
 8 *center and all related research activities that grant recipi-*
 9 *ents carry out shall not exceed 75 percent of the costs. The*
 10 *United States Government’s share of an individual grant*
 11 *under this section shall not exceed 90 percent of the costs.”.*

12 *(b) ANNUAL REPORT.—The Administrator shall trans-*
 13 *mit a report annually to the Committee on Science and*
 14 *Technology of the House of Representatives and the Com-*
 15 *mittee on Commerce, Science, and Transportation of the*
 16 *Senate at the time of the President’s budget request that*
 17 *lists—*

18 *(1) the research projects that have been initiated*
 19 *by each Center of Excellence in the preceding year;*

20 *(2) the amount of funding for each research*
 21 *project and the funding source;*

22 *(3) the institutions participating in each project*
 23 *and their shares of the overall funding for each re-*
 24 *search project; and*

1 (4) *the level of cost-sharing for each research*
 2 *project.*

3 **SEC. 9. AIRPORT COOPERATIVE RESEARCH PROGRAM.**

4 *Section 44511(f) of title 49, United States Code, is*
 5 *amended—*

6 (1) *in paragraph (1), by striking “establish a 4-*
 7 *year pilot” and inserting “maintain an”; and*

8 (2) *in paragraph (4)—*

9 (A) *by striking “expiration of the program”*
 10 *and inserting “expiration of the pilot program”;*
 11 *and*

12 (B) *by striking “program, including rec-*
 13 *ommendations as to the need for establishing a*
 14 *permanent airport cooperative research pro-*
 15 *gram” and inserting “program”.*

16 **SEC. 10. RESEARCH GRANTS PROGRAM INVOLVING UNDER-**
 17 **GRADUATE STUDENTS.**

18 (a) *IN GENERAL.—The Administrator shall establish*
 19 *a program to utilize colleges and universities, including*
 20 *Historically Black Colleges and Universities, Hispanic*
 21 *Serving Institutions, tribally controlled colleges and univer-*
 22 *sities, and Alaska Native and Native Hawaiian serving in-*
 23 *stitutions in conducting research by undergraduate students*
 24 *on subjects of relevance to the FAA. Grants may be awarded*
 25 *under this section for—*

1 (1) *research projects to be carried out primarily*
 2 *by undergraduate students;*

3 (2) *research projects that combine undergraduate*
 4 *research with other research supported by the FAA;*

5 (3) *research on future training requirements re-*
 6 *lated to projected changes in regulatory requirements*
 7 *for aircraft maintenance and power plant licensees;*
 8 *and*

9 (4) *research on the impact of new technologies*
 10 *and procedures, particularly those related to aircraft*
 11 *flight deck and air traffic management functions, and*
 12 *on training requirements for pilots and air traffic*
 13 *controllers.*

14 (b) *AUTHORIZATION OF APPROPRIATIONS.—There is*
 15 *authorized to be appropriated \$5,000,000 for each of the*
 16 *fiscal years 2008 through 2011, for research grants under*
 17 *this section.*

18 **SEC. 11. BUDGET FORMULATION.**

19 *Section 48102 of title 49, United States Code, is*
 20 *amended by inserting after subsection (f) the following new*
 21 *subsection:*

22 “(g) *BUDGET FORMULATION.—(1) The Department of*
 23 *Transportation’s annual budget request for the Federal*
 24 *Aviation Administration shall identify all of the activities*
 25 *carried out by the Administration within the categories of*

1 *basic research, applied research, and development, as classi-*
 2 *fied by the Office of Management and Budget Circular A–*
 3 *11. Each activity in the categories of basic research, applied*
 4 *research, and development shall be identified regardless of*
 5 *the budget category in which it appears in the budget re-*
 6 *quest.*

7 “(2) *The budget request specified in paragraph (1)*
 8 *shall be submitted to the Committee on Science and Tech-*
 9 *nology and the Committee on Transportation and Infra-*
 10 *structure of the House of Representatives and the Committee*
 11 *on Commerce, Science, and Transportation of the Senate*
 12 *at the same time as the President’s Budget Request is sub-*
 13 *mitted to the Congress.”.*

14 **SEC. 12. RESEARCH PROGRAM ON SPACE WEATHER AND**
 15 **AVIATION.**

16 (a) *ESTABLISHMENT.*—*The Administrator of the Fed-*
 17 *eral Aviation Administration shall, in coordination with*
 18 *the National Science Foundation, National Aeronautics*
 19 *and Space Administration, National Oceanic and Atmos-*
 20 *pheric Administration, and other relevant agencies, initiate*
 21 *a research program to—*

22 (1) *conduct or supervise research projects on im-*
 23 *pacts of space weather to aviation, including commu-*
 24 *nication, navigation, avionic systems, and on airline*
 25 *passengers and personnel; and*

1 (2) *facilitate the transfer of technology from*
2 *space weather research programs to Federal agencies*
3 *with operational responsibilities and to the private*
4 *sector.*

5 (b) *USE OF GRANTS OR COOPERATIVE AGREE-*
6 *MENTS.—The Administrator may use grants or cooperative*
7 *agreements in carrying out this section.*

8 (c) *AUTHORIZATION OF APPROPRIATIONS.—In addi-*
9 *tion to amounts authorized to be appropriated by the*
10 *amendments made by this Act, there is authorized to be ap-*
11 *propriated \$1,000,000 for each of the fiscal years 2008*
12 *through 2011 to carry out this section.*

13 **SEC. 13. AVIATION GAS RESEARCH AND DEVELOPMENT**
14 **PROGRAM.**

15 (a) *CONTINUATION OF PROGRAM.—The Administrator,*
16 *in coordination with the NASA Administrator, shall con-*
17 *tinue research and development activities into technologies*
18 *for modification of existing general aviation piston engines*
19 *to enable their safe operation using unleaded aviation fuel.*

20 (b) *ROADMAP.—Not later than 120 days of the enact-*
21 *ment of this Act, the Administrator shall develop a research*
22 *and development roadmap for the program continued in*
23 *subsection (a), containing the specific research and develop-*
24 *ment objectives and anticipated timetable for achieving the*
25 *objectives.*

1 (c) *REPORT*.—Not later than 130 days of the enact-
 2 ment of this Act, the Administrator shall provide the road-
 3 map specified in subsection (b) to the Committee on Science
 4 and Technology of the House of Representatives and the
 5 Committee on Commerce, Science, and Transportation of
 6 the Senate.

7 (d) *AUTHORIZATION OF APPROPRIATIONS*.—There is
 8 authorized to be appropriated \$750,000 for each of the fiscal
 9 years 2008 through 2010, to carry out this section.

10 **SEC. 14. RESEARCH REVIEWS AND ASSESSMENTS.**

11 (a) *REVIEW OF FAA’S ENERGY- AND ENVIRONMENT-*
 12 *RELATED RESEARCH PROGRAMS*.—

13 (1) *STUDY*.—The Administrator shall enter into
 14 an arrangement with the National Research Council
 15 for a review of the FAA’s energy- and environment-
 16 related research program. The review shall assess
 17 whether—

18 (A) the programs have well-defined,
 19 prioritized, and appropriate research objectives;

20 (B) the program are properly coordinated
 21 with the energy- and environment-related re-
 22 search programs of NASA, NOAA, and other rel-
 23 evant agencies;

24 (C) the program have allocated appropriate
 25 resources to each of the research objectives; and

1 (D) *there exist suitable mechanisms for*
 2 *transitioning the research results into the FAA's*
 3 *operational technologies and procedures and cer-*
 4 *tification activities.*

5 (2) *REPORT.—A report containing the results of*
 6 *the review shall be provided to the Committee on*
 7 *Science and Technology of the House of Representa-*
 8 *tives and the Committee on Commerce, Science, and*
 9 *Transportation of the Senate within eighteen months*
 10 *of the enactment of this Act.*

11 (b) *ASSESSMENT OF THE IMPACT OF SPACE WEATHER*
 12 *ON AVIATION.—*

13 (1) *STUDY.—The Administrator shall enter into*
 14 *an arrangement with the National Research Council*
 15 *for a study of the impacts of space weather on the*
 16 *current and future United States aviation industry,*
 17 *and in particular, to examine the risks for Over-The-*
 18 *Pole (OTP) and Ultra-Long-Range (ULR) operations.*
 19 *The study shall—*

20 (A) *examine space weather impacts on at*
 21 *least the following areas: communications, navi-*
 22 *gation, avionics, and human health in flight;*

23 (B) *assess the benefits of space weather in-*
 24 *formation and services to reduce aviation costs*
 25 *and maintain safety;*

1 (C) provide recommendations on how
 2 NASA, NOAA, and the NSF can most effectively
 3 carry out research and monitoring activities re-
 4 lated to space weather and aviation; and

5 (D) provide recommendations on how to in-
 6 tegrate space weather information into the Next
 7 Generation Air Transportation System.

8 (2) *REPORT*.—A report containing the results of
 9 the study shall be provided to the Committee on
 10 Science and Technology of the House of Representa-
 11 tives and the Committee on Commerce, Science, and
 12 Transportation of the Senate not later than 1 year
 13 after the date of enactment of this Act.

14 **SEC. 15. REVIEW OF FAA’S AVIATION SAFETY-RELATED RE-**
 15 **SEARCH PROGRAMS.**

16 (a) *REVIEW*.—The Administrator shall enter into an
 17 arrangement with the National Research Council for an
 18 independent review of the FAA’s aviation safety-related re-
 19 search programs. The review shall assess whether—

20 (1) the programs have well-defined, prioritized,
 21 and appropriate research objectives;

22 (2) the programs are properly coordinated with
 23 the safety research programs of NASA and other rel-
 24 evant Federal agencies;

1 (3) *the programs have allocated appropriate re-*
 2 *sources to each of the research objectives; and*

3 (4) *there exist suitable mechanisms for*
 4 *transitioning the research results from the programs*
 5 *into the FAA's operational technologies and proce-*
 6 *dures and certification activities in a timely manner.*

7 (b) *AVIATION SAFETY-RELATED RESEARCH PRO-*
 8 *GRAMS TO BE ASSESSED.—The FAA aviation safety-re-*
 9 *lated research programs to be assessed under the review*
 10 *shall include, at a minimum, the following:*

11 (1) *Air traffic control/technical operations*
 12 *human factors.*

13 (2) *Runway incursion reduction.*

14 (3) *Flightdeck/maintenance system integration*
 15 *human factors.*

16 (4) *Airports technology research—safety.*

17 (5) *Airport cooperative research program—safe-*
 18 *ty.*

19 (6) *Weather program.*

20 (7) *Atmospheric hazards/digital system safety.*

21 (8) *Fire research and safety.*

22 (9) *Propulsion and fuel systems.*

23 (10) *Advanced materials/structural safety.*

24 (11) *Aging aircraft.*

1 (12) *Aircraft catastrophic failure prevention re-*
2 *search.*

3 (13) *Aeromedical research.*

4 (14) *Aviation safety risk analysis.*

5 (15) *Unmanned aircraft systems research.*

6 (16) *Safe Flight 21—Alaska Capstone.*

7 (c) *REPORT.—Not later than 14 months after the date*
8 *of enactment of this Act, the Administrator shall submit*
9 *to the Committee on Science and Technology of the House*
10 *of Representatives and the Committee on Commerce,*
11 *Science, and Transportation of the Senate a report on the*
12 *results of the review.*

13 (d) *AUTHORIZATION OF APPROPRIATIONS.—In addi-*
14 *tion to amounts authorized to be appropriated by the*
15 *amendments made by this Act, there is authorized to be ap-*
16 *propriated \$700,000 for fiscal year 2008 to carry out this*
17 *section.*

Union Calendar No. 205

110TH CONGRESS
1ST Session

H. R. 2698

[Report No. 110-329]

A BILL

To authorize appropriations for the civil aviation research and development projects and activities of the Federal Aviation Administration, and for other purposes.

SEPTEMBER 17, 2007

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed